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1921

DIABETES MELLITUS

A SYSTEM OF DIETS

HERMAN O. MOSENTHAL, M.D.

PAUL B. HOEBER, PUBLISHER, NEW YORK

RC 660

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Columbia University 1921
in the City of New York

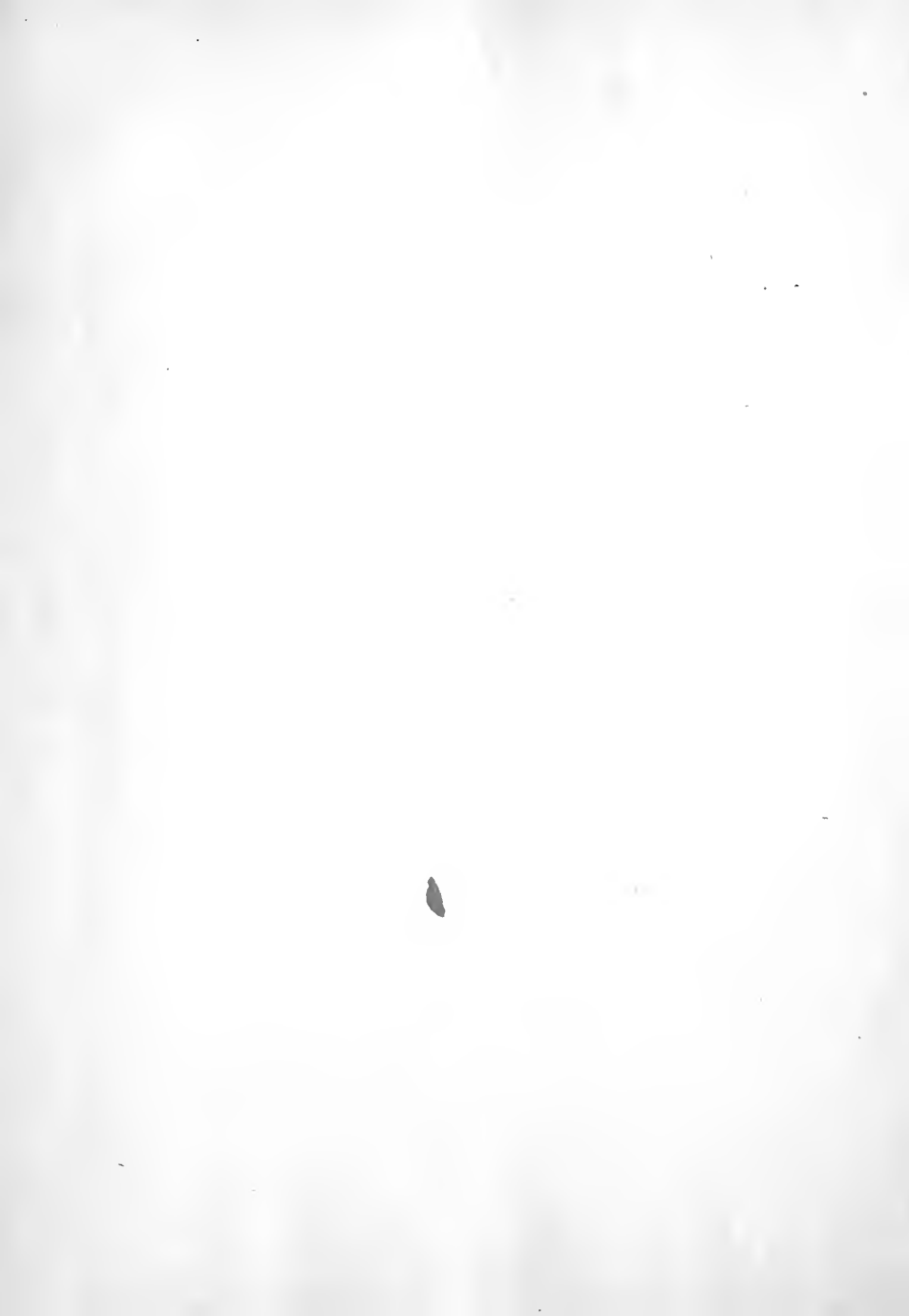
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DIABETES MELLITUS

A SYSTEM OF DIETS

NOTE

The various diet tables given in this book may be obtained in pad form, 50 sheets to the pad, as follows:

- No. 1—Starch-Free Diet, Qualitative List, (page 11.)
- No. 2—Minimal Fat, Starch-Free, Measured Diet, (pages 16-17.)
- No. 3—Minimal Fat, Starch-Free, Weighed Diet, (pages 22-23.)
- No. 4—Low Fat, Starch-Free, Measured Diet, (pages 18-19.)
- No. 5—Low Fat, Starch-Free, Weighed Diet, (pages 26-27.)
- No. 6—Accessory Diet, Rich in Carbohydrates, (page 29.)

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PAUL B. HOEBER, *Publisher*, 67-69 East 59th Street, New York City

DIABETES MELLITUS

A SYSTEM OF DIETS

BY

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NEW YORK

PAUL B. HOEBER

67-69 EAST 59th STREET, NEW YORK

4352
1921

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Published January, 1921

Printed in the United States of America

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PREFACE

The art of prescribing diets in diabetes mellitus has distinctly outstripped the ability of the patient or average nurse to meet the situation. The result has been that only the minority of diabetics, favored by dietitians or a specially trained member of the household can indulge in varied and accurate diets measured in grams of proteins, fats and carbohydrates. In many hospitals the same condition holds true; those having large resources have a sufficient number of dietitians to carry out the dietetic prescriptions properly while the majority rely on a few, usually very inadequate, food lists to meet the needs of the patient. The present system of diets has been designed with the object of allowing any patient or nurse, without special training in dietetics, to carry out the proper rationing for cases of diabetes mellitus. These diet lists have been in successful use in a number of hospitals and clinics for several years. It is proposed to issue the individual lists in pad form, so that they may be of more general use. The plan upon which these diets depend was first published in the *Medical Clinics of North America*; subsequently the scheme for the "Measured diets" was printed in *The American Journal of Medical Sciences* by Herbert Wiener and the author.

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COMMENT ON THE DIETS

THE diet lists virtually explain themselves. Variety in the weighed or measured diets is obtained by resorting to the vegetable or meat and fish lists. If finer gradations than 250 calories are desired in increasing or diminishing the food this can easily be done by adding or taking away only a fraction of the foods by which the diet in use differs from the next higher or lower one.

A word of explanation as to the reason for the particular proportion of proteins and fats employed and as to the method of prescribing the diets may be of some value.

The minimal fat diets are intended to be emergency diets only. They are to be used when acidosis is to be combated. The most efficient means at hand to-day, to prevent the accumulation of acid substances within the body, in diabetes mellitus, is to cut the fat intake to a minimum.

The so-called low fat diets are those intended for prolonged administration. After some experimentation it was found that the lowest amount of fat, which serves to make the food palatable in the long run, is present in a starch free diet when the fats and proteins are approximately equal to each other gram for gram. At the same time such a restriction of fat serves to keep the acidosis in check.

It is realized to-day that the diabetic can lose weight without detriment; what is not so generally appreciated is that this loss of weight should occur in the fat content of the body and not in the proteins of the muscles and glands. If a depletion of proteins takes place not only is weight lost, but strength and efficiency as well. In a "Starch-free" diet the only form of food which has the ability to conserve protein are the proteins themselves; fat and alcohol appear to be without value in this regard (Mosenthal, H. O., and Harrop, G. A., Jr., *Arch. Int. Med.*, 1918, XXII, 750). Hence the feeding of an excessive quantity of fat is not justified.

By clinical observation it was determined that small persons could be maintained in a condition of nitrogen (that is protein) equilibrium on the present low fat, starch free diets of 1500 calories, larger individuals required 1750 calories (Mosenthal, H. O., and Clausen, S. W., *Arch. Int. Med.*, 1918, XXI, 269). Basing a mode of procedure upon this fact, the aim has been to have the patient acquire a sugar free urine while a diet of 1500 or 1750 calories is taken before starchy food is added. The food rich in carbohydrates may be subsequently used. The table giving the foods in units of starch equivalent to one slice of bread will be found useful in carrying out this plan.

None of the proprietary foods have been advocated in the present tables. If it is desired to employ them it is wise to be guided by the list of analyses of diabetic foods, as furnished by the Connecticut Agricultural Experiment Station at New Haven, Connecticut.

STARCH-FREE DIET

QUALITATIVE LIST

Many mild cases of diabetes mellitus do not require a weighed or measured diet to maintain a sugar-free urine and to control their disease. For them the starch-free diet, qualitative list, upon the opposite page will suffice. In the blank space at the bottom of this diet sheet, starch containing foods may be indicated, for use in suitable cases. The list tabulating the accessory diet of foods rich in carbohydrates will be of service in this connection.

STARCH-FREE DIET

QUALITATIVE LIST

MAY EAT:

Soups—Clear meat broths, which may contain the vegetables indicated below.

Meats—All kinds of meat, fresh, smoked or cured, except liver; all meats must be prepared without flour or bread-crumbs.

Fish—All kinds of fish, but no clams, oysters or scallops.

Eggs—Eggs in any form, prepared without milk, flour or sweetening (sugar, jam, etc.).

Butter—Butter, oil and lard.

Cheese—All kinds of cheese.

Vegetables—Asparagus, asparagus tips, brussels sprouts, cabbage, cauliflower, celery, cucumbers, egg plant, endive, greens from beets, kohlrabi, leeks, lettuce, pickles (sour or dill), pumpkin, radishes, rhubarb, sauerkraut, sorrel, spinach, string beans, swiss chard, tomatoes, water cress, wax beans.

Desserts—Gelatine jellies (use sour white wine, brandy or coffee for flavoring).

Beverages—Tea, coffee and cocoa made from cracked cocoa (cocoa nibs), sweetened with saccharine (without sugar or milk); claret, burgundy, sour white wine, and whiskey in moderate amounts; carbonated waters.

Condiments—Pepper, salt, mustard, oil, vinegar, saccharine.

MUST AVOID EATING:

Sugar in any form. Bread, biscuits, and cakes of all kinds. Toast, crackers, rice, oatmeal (and all cereals); sago, tapioca, macaroni, vermicelli, potatoes, carrots, parsnips, beets, corn, beans, peas. All fruits, fresh, preserved and dried. Jams and jellies. Pastry, puddings and ice cream. Sauces and gravies thickened with flour.

MUST AVOID DRINKING:

Milks; ales, porter, stout, beer, cider, all sweet wines, port wine, liqueurs, sparkling wines, syrups.

BESIDES ABOVE MUST EAT:

STARVATION

When complete abstinence from food is indicated and the so-called "starvation treatment" is employed the following articles of food, whose nutritive value is negligible, are allowed: Clear broth, black coffee, plain tea, saccharine, salt and pepper. In some instances the use of alcohol is permissible. Alcohol does not increase the production of sugar; it has a tendency to further the oxidation of the acid substances along normal channels, thus diminishing acidosis, and it has an appreciable food value. These facts point to alcohol as an ideal food for the diabetic. However, its use has been largely discontinued, especially during starvation, as there are many patients in whom the alcohol is prone to disagree and cause nausea and vomiting. When it is desired to use alcohol, whiskey, brandy, claret or sour white wine may be ordered.

There is one point well worth bearing in mind in administering the starvation treatment. This is the fact that under this form of diet the patient frequently loses a great deal of water from the tissues. This results in a feeling of weakness and lassitude which often is very marked and in advanced cases of diabetes may assume a serious aspect. Such a loss of fluid from the body may be prevented by the administration of considerable amounts of salt in the broth or the use of bicarbonate of soda. If a slight degree of edema ensues it does no harm though it should not be allowed to reach undue proportions.

THE MEASURED DIETS

The following lists have been prepared in order to bring weighed diets to their simplest possible terms. They have been designed especially for diabetic patients who are able to be up and about attending to their routine duties, and not endowed with unlimited means. The successful management of such patients depends largely upon the ease with which they are enabled to follow the prescribed dietary regime. By the use of these diet lists the physician can readily control the total caloric intake as well as the relative amounts of protein, fat and carbohydrate consumed, while at the same time the essential coöperation of the patient is reduced to a minimum in time and mental effort.

The measured diets in the modern treatment of diabetes must meet two requirements: (1) Control of the glycosuria, and (2) control of the acidosis. The first of these is accomplished by regulating the consumption of the carbohydrates and proteins, and the second by adjusting the fat intake. The greatest recent advance in the management of diabetes mellitus is the recognition of the fact that a curtailment of the fatty foods will prevent or postpone acidosis and coma. Two sets of diets are necessary, therefore: (1) In which the fats are reduced to a minimum, and (2) in which fats are allowed more liberally, but in limited amounts. The latter is the preferable diet to use when possible, as it is much the more palatable when continued for a long time. Accordingly, two diets have been designed, one the so-called "minimal fat diet" and the other the "low fat diet;" in both of them the only carbohydrate is that contained in the green vegetables.

The minimal fat diet is graded by 250 calory steps from 500 to 1250 calories. It is not feasible to increase the diet beyond this point, because when proteins make up the greater part of the nourishment, as they necessarily do in the minimal fat diet, the bulk of food becomes too great. It is even problematical whether all patients can consume the amounts designated under the 1250 calory diet. However, the safest way to curtail the food in diabetics suffering with severe acidosis or threatened coma is first to restrict the fats. By means of the present list, this can easily be done. Carbohydrates may be added if it is thought advisable.

For practical purposes of rough measurement the table and teaspoonful portions are adequate and exact within a reasonable margin of error. The portions of meat and fish are calculated to within the nearest $\frac{1}{4}$ -ounce value. One-quarter ounce is probably closer than the average scales of the butcher or home can weigh accurately, but in giving the amounts in these fractions an indication is furnished on what side allowances should be made. The actual use of these diet lists is self-explanatory.

A concrete idea of the proportion of proteins and fats in these diets may be gained from the following tables. In the minimal fat diet the ratio of protein to fat is found to be about 3 to 1 when round steak is eaten as the meat or fish, and 17 to 1 when blue fish is used. This, in either case, furnishes a very low fat intake. When the lowest possible quantity of fat is required it is evident that fish is more desirable than meat.

MEASURED DIETS

APPROXIMATE QUANTITIES OF PROTEIN, FAT AND CARBOHYDRATE IN THE MINIMAL FAT, STARCH-FREE DIET WHEN ROUND STEAK OR BLUE FISH ARE USED AS MEAT OR FISH

Minimal fat diet when round steak is used:	Protein, gm.	Fat, gm.	Carbohydrate, gm.	Minimal fat diet when blue fish is used:	Protein, gm.	Fat, gm.	Carbohydrate, gm.
500 calories.....	60	20	18	500 calories.....	88	4	18
750 calories.....	93	33	18	750 calories.....	148	8	18
1000 calories.....	126	43	21	1000 calories.....	193	12	21
1250 calories.....	159	54	24	1250 calories.....	244	14	24

The next table gives the relative values of protein, fat and carbohydrate when roast beef, round steak or flounder are used as the meat or fish in the low fat diet. These particular foods were selected because they represent a high, average and low fat content for these diets. When roast beef is eaten the fat is higher than the protein; with the flounder the ratio is reversed. The low fat diet, when the patient chooses his own food, has been calculated and found to contain, as a rule, proteins and fats approximately equal gram for gram.

APPROXIMATE QUANTITIES OF PROTEIN, FAT AND CARBOHYDRATE IN THE LOW FAT, STARCH-FREE DIET WHEN ROAST BEEF, STEAK OR FLOUNDER ARE USED AS MEAT OR FISH

Low fat diet when roast beef is used:	Protein, gm.	Fat, gm.	Carbohydrate, gm.	Low fat diet when steak is used:	Protein, gm.	Fat, gm.	Carbohydrate, gm.	Low fat diet when flounder is used:	Protein, gm.	Fat, gm.	Carbohydrate, gm.
500 calories.....	22	39	12	500 calories.....	44	29	12	500 calories.....	73	16	12
750 calories.....	33	71	12	750 calories.....	72	44	12	750 calories.....	122	22	12
1000 calories.....	39	83	15	1000 calories.....	87	64	15	1000 calories.....	149	37	15
1250 calories.....	50	106	17	1250 calories.....	105	83	17	1250 calories.....	172	52	17
1500 calories.....	66	126	18	1500 calories.....	134	97	18	1500 calories.....	217	59	18
1750 calories.....	75	149	19	1750 calories.....	147	118	19	1750 calories.....	235	77	19
2000 calories.....	85	169	19	2000 calories.....	164	136	19	2000 calories.....	259	92	19

In the low fat diets there is no difficulty, as far as bulk of food is concerned, in consuming as much as 2000 calories. As Mosenthal and Clausen have shown a carbohydrate-free diet of 1500 to 1750 calories, containing approximately the same proportion of protein and fat as the present list, will maintain the nitrogen equilibrium of the diabetic and may be considered to furnish the patient with enough food to make him mentally and physically efficient. If the carbohydrate tolerance of the patient permits of a still further increase in the food it is best to add starch-containing foods and not proteins or fats.

The above food lists are presented in the belief that they will furnish a practical means of regulating the diet of sufferers from diabetes mellitus who are not receiving hospital treatment, and who, while under medical supervision, are dependent upon their own resources for the details of dietetic control. These diets are not intended in any way to supplant the more accurate and ideal means of weighing and measuring food, as are detailed in the subsequent diets, the weighed diets.

As printed on the following pages, the diets and their supplementary lists are printed face to face. In pad form they are printed back to back, so that one sheet furnishes a complete dietary scheme.

MINIMAL FAT, STARCH-FREE DIET—MEASURED DIET

	Calories	500	750	1000	1250
BREAKFAST —Black coffee or plain tea as desired.					
Meat or fish (see list) portion.....		A	B	C	C
Vegetables from list, heaping tablespoonsful.....		4	4	4	4
DINNER —Clear meat broth, plain, as desired					
Meat or fish, from list, portion.....		B	C	D	E
Vegetables from list, heaping tablespoonsful.....		4	4	5	6
Pot cheese, heaping tablespoonsful.....		none	none	none	1
Gelatin jelly, flavored with coffee and saccharine, heaping tablespoonsful.....		none	none	2	2
Black coffee or plain tea as desired.....					
SUPPER —Clear meat broth, plain, as desired					
Meat or fish, from list, portion.....		B	C	D	E
Vegetables from list, heaping tablespoonsful.....		4	4	5	5
Black coffee or plain tea as desired.....					
SPECIAL ORDERS —					
Saccharine, 5 tablets or less during whole day.					
No butter, fat or oil to be used in cooking.					

MINIMAL FAT STARCH-FREE DIET—MEASURED DIET

MEAT AND FISH PORTIONS

		Ounces of food weighed raw				
MEATS	Portion	A	B	C	D	E
Beef:						
Soup meat, fore-shank, lean.....	3	4½	7¼	9	11¾	
Dried beef.....	1½	2½	4¼	5	6¾	
Lean round steak.....	2¼	3½	5¾	7	9¼	
Lean roast beef (no visible fat)....	2¼	3½	6	7	9¼	
Kidney.....	3	4½	7½	9	12	
Chicken.....	3	4½	7½	9	12	
Lean leg of lamb (no visible fat)....	1¾	2½	4	5	6¾	
Tripe.....	5¾	8¼	14	16¾	22	
Lean veal (no visible fat).....	2¾	4	7	8	11	
FISH (Fresh only):						
Bluefish.....	4	6	10	11¾	15½	
Codfish.....	4½	6½	11	13	17½	
Flounder.....	5½	8¼	14	16½	22	
Haddock.....	4¾	7	11¾	14¼	19	
Sea Bass.....	4¼	6¼	10½	12½	16½	
Sheepshead.....	3	4½	7½	9	12	
Smelts.....	4	6	10	11¾	15½	
Weakfish.....	3¾	5½	9¼	11	14¾	

VEGETABLES (Fresh or Canned)

Asparagus
Asparagus tips
Brussels sprouts
Cabbage
Cauliflower
Celery
Cucumbers
Egg plant
Endive
Greens from beets
Kohlrabi
Leeks
Lettuce
Pickles, sour or dill
Pumpkin
Radishes
Rhubarb
Sauerkraut
Sorrel
Spinach
String beans
Swiss chard
Tomatoes
Water cress
Wax beans

LOW FAT, STARCH-FREE DIET—MEASURED DIET

Calories	500	750	1000	1250	1500	1750	2000
BREAKFAST —Black coffee or plain tea as desired.....							
Eggs.....	1	1	1	2	2	2	2
Meat or fish (see list) portion.....	A	B	B	C	D	E	F
Butter, flat teaspoonful.....	none	1	1	2	2	3	3
DINNER —Clear meat broth, as desired.....							
Meat or fish, from list, portion.....	B	D	E	E	F	F	F
Vegetables from list, heaping tablespoonsful.....	4	4	5	6	6	6	6
Pot cheese, heaping tablespoonsful.....	none	none	none	none	none	1	1
Olive oil, teaspoonful.....	none	none	2	2	2	3	3
Butter, flat teaspoonful.....	1	1	2	2	2	3	4
Black coffee or plain tea (no sugar) as desired.....							
SUPPER —Clear meat broth, as desired.....							
Eggs.....	none	none	none	none	1	1	2
Meat or fish, from list, portion.....	B	D	E	E	F	F	F
Vegetables from list, heaping tablespoonsful.....	4	4	5	5	6	6	6
Butter, flat teaspoonful.....	1	1	1	2	2	3	4
Black coffee or plain tea, as desired.....							
SPECIAL ORDERS —							
Saccharine, 5 tablets or less in a day.							
No extra butter, oil or fat to be used in cooking.							

LOW FAT, STARCH-FREE DIET—MEASURED DIET

MEAT AND FISH PORTIONS

		Ounces of food weighed raw					
MEATS	Portion	A	B	C	D	E	F
Bacon, fried, fat thrown away.....	1¼	1½	2¾	3	3¾	5	
Brain.....	2½	3	3½	6	7¼	9½	
Chicken (to be boiled or broiled).....	2½	3	5½	6	7½	10	
Chicken (to be roasted).....	1¼	1½	2¾	2¾	3½	4¾	
Corned beef.....	1	1¼	2¼	2¼	2¾	3¾	
Dried beef.....	1¼	1½	3	3¼	4¼	5½	
Duck.....	1¼	1¼	2½	2¾	3½	4½	
Ham, smoked (to be boiled or broiled).....	1	1¼	2¾	2½	3	4	
Guinea hen.....	2	2¼	4¼	4½	5¾	7½	
Kidney.....	2½	3	5½	6	7½	10	
Lamb chops.....	0	1	1¾	2	2½	3¼	
Lamb (to be roasted).....	1	1¼	2¼	2½	3	4	
Mutton (to be boiled).....	1¾	2	4	4¼	5¼	7	
Mutton chops, lean.....	2¼	2½	4¾	5¼	6½	8½	
Mutton (to be roasted).....	1	1	2	2¼	2¾	3¾	
Pork (to be roasted).....	1½	1¾	3	3¼	4¼	5½	
Pork chop, lean (to be broiled).....	2	2¼	4	4¼	5½	7	
Roast beef.....	0	1	1¾	2	2½	3¼	
Soup meat, fore-shank, lean (to be boiled).....	2½	3	3½	6	7¼	9½	
Squab.....	1½	1¾	3	3¼	4¾	5½	
Steak, round, lean.....	2	2¼	4¾	5¼	5¾	7½	
Steak, sirloin, lean.....	1¾	2	3¾	4	5	6½	
Tongue, fresh (to be boiled).....	1¾	2¼	4	4¼	5½	7	
Tongue, boiled, smoked, cold.....	1	1	2	2¼	2¾	3½	
Veal, roast or chop, lean.....	2¼	2½	4¾	5¼	6½	8½	
FISH, fresh	Portion	A	B	C	D	E	F
(To be boiled or broiled)							
Bass, black.....	3	3½	6½	7	9	11½	
Bass, sea.....	3½	4¼	7¾	8¼	10½	13½	
Bluefish.....	3¼	4	7¼	7¾	9¾	12½	
Butterfish.....	1¾	2	3¾	4	5	6½	
Codfish.....	3¾	4¼	8	8¾	11	14	
Flounder.....	4¾	5½	10¾	11	14	18	
Haddock.....	4	4¾	8¾	9½	12	15½	
Halibut.....	2½	2¾	5¼	5¾	7¼	9¼	
Kingfish.....	3¼	4	7¼	8	10	13	
Mackerel.....	2	2½	4½	5	6¼	8	
Perch.....	3½	4¼	7¾	8¼	10½	13½	
Pike.....	3¾	4¼	8	8¾	11	14	
Porgy.....	2½	2¾	5¼	5¾	7¼	9¼	
Salmon.....	1½	1¾	3	3½	4¾	5½	
Sheepshead.....	2½	3	5½	6	7½	9¾	
Smelts.....	3¼	4	7¼	8	10	13	
Weakfish.....	3	3¾	6¾	7½	9¼	12	
Whitefish.....	4	4¾	8¾	9½	12	15½	
Canned or Smoked							
Herring, smoked.....	1	1¼	2¼	2¼	3	3¾	
Salmon, canned.....	1½	1¾	3¼	3½	4½	5½	
Sardines in oil.....	1	1¼	2¼	2½	3	4	
Sturgeon, smoked.....	1¼	1½	3	3¼	4	5¼	
Tunnyfish in oil, canned.....	1	1¼	2¼	2¼	3	4	

VEGETABLES (Fresh or Canned)

Asparagus
Asparagus tips
Brussels sprouts
Cabbage
Cauliflower
Celery
Cucumbers
Egg plant
Endive
Greens from beets
Kohlrabi
Leeks
Lettuce
Pickles, sour or dill
Pumpkin
Radishes
Rhubarb
Sauerkraut
Sorrel
Spinach
String beans
Swiss chard
Tomatoes
Water cress
Wax beans

THE WEIGHED DIETS

These diets may be employed when the means are at hand to weigh the food with some accuracy. They are preferable to the measured diets. The patient or intelligent attendant can learn to use these lists in a very short time and provide menus which present a considerable variety, please the patient's taste, as far as this is possible on a starch-free diet, and are adapted to the needs of the sufferer with diabetes mellitus.

MINIMAL FAT, STARCH-FREE DIET, WEIGHED DIET

This set of diets is intended for use in those emergencies when the lowest possible amount of fat is to be administered so as to control acidosis. When the means of weighing the food are not at hand the minimal fat, starch-free measured diet may be resorted to. These diets are not intended for long continued use. On account of the bulky character of the proteins, which make up the greater part of the ration, it is not feasible to raise these diets above 1250 grams.

A summary of the food values is as follows:

MINIMAL FAT, STARCH-FREE DIET, WEIGHED DIET

Summary of Food Values

	Calories	250	500	750	1000	1250
Protein, gm.....	33	67	111	145	183	
Fat, gm.....	6	15	24	34	43	
Carbohydrate, gm.....	15	18	19	23	26	
Actual calories.....	253	494	556	1002	1257	

If meat or fish containing less fat and more protein than the round steak be substituted, the fat content of these diets may be lowered still further.

The individual food values for some of these diets are given in the subsequent tables. A reference to these figures will enable the physician or dietitian to make finer gradations or other modifications in these diets without recourse to more elaborate tables for food values.

WEIGHED DIET

MINIMAL FAT, STARCH-FREE DIET, WEIGHED DIET

500 calories

Food		Protein, gm.	Fat, gm.	C-H, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
Steak,* round, lean, gm.....	60	16.6	4.6	0	111	144
Vegetables from list, gm.....	200	2.0	0	6.0	33	
Black coffee or plain tea.....	...	...	...	...	...
<i>Dinner:</i>						
Clear meat broth, cc.....	200	4.4	0.4	0	22	184
Steak,* round, lean, gm.....	70	19.3	5.4	0	129	
Vegetables from list, gm.....	200	2.0	0	6.0	33	
Black coffee or plain tea.....	...	...	...	...	...
<i>Supper:</i>						
Clear meat broth, cc.....	200	4.4	0.4	0	22	166
Steak,* round, lean gm.....	60	16.6	4.6	0	111	
Vegetables from list, gm.....	200	2.0	0	6.0	33	
Black coffee or plain tea.....	...	...	...	...	...
...	...	67.3	15.4	18.0	...		494

MINIMAL FAT, STARCH-FREE DIET, WEIGHED DIET

1000 calories

Food		Protein, gm.	Fat, gm.	C-II, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
Steak,* round, lean, gm.....	120	33.1	9.2	0	221	256
Vegetables from list, gm.....	200	2.0	0	6.0	33	
Black coffee or plain tea.....	...	...	...	...	...
<i>Dinner:</i>						
Clear meat broth, cc.....	200	4.4	0.4	0	22	405
Steak,* round, lean, gm.....	150	41.4	11.6	0	278	
Vegetables from list, gm.....	250	2.5	0	7.5	41	
Pot cheese, gm.....	40	8.4	0.4	1.7	45	
Gelatin jelly flavored with coffee and sac- charine, gm.....	70	4.6	0	0	19	
Black coffee or plain tea.....	...	...	...	...	...
<i>Supper:</i>						
Clear meat broth, cc.....	200	4.4	0.4	0	22	341
Steak,* round, lean, gm.....	150	41.4	11.6	0	278	
Vegetables from list, gm.....	250	2.5	0	7.5	41	
Black coffee or plain tea.....	...	...	...	...	...
...	...	144.7	33.6	22.7	...	1002

* Other meats and fish may be substituted for the round steak according to their caloric equivalents from the accompanying list.

On the next two pages the figures for the minimal fat, starch-free, weighed diets as they are to be used are given. In pad form, the two pages which face each other are printed back to back, so that one sheet furnishes a complete dietary scheme.

MINIMAL FAT, STARCH-FREE DIET, WEIGHED DIET

Calories	250	500	750	1000	1250
BREAKFAST —Steak,* round, lean, gm.....	20	60	100	120	160
Vegetables from list, gm.....	100	200	200	200	200
Black coffee or plain tea as desired.....					
DINNER —Clear meat broth, cc.....	200	200	200	200	250
Steak,* round, lean, gm.....	30	70	100	150	180
Vegetables from list, gm.....	200	200	200	250	300
Pot cheese, gm.....			30	40	50
Gelatin jelly flavored with coffee and saccharine, gm.....			60	70	70
Black coffee or plain tea as desired.....					
SUPPER —Clear meat broth, cc.....	200	200	200	200	250
Steak,* round, lean, gm.....	20	60	100	150	200
Vegetables from list, gm.....	200	200	200	250	300
Black coffee or plain tea as desired.....					
SPECIAL ORDERS —					
Saccharine as desired.....					

*Other meats and fish may be substituted for the round steak according to their caloric equivalents from the accompanying list.

MINIMAL FAT, STARCH-FREE DIET—WEIGHED DIET

CALORIC EQUIVALENT OF 10 GM. OF LEAN ROUND STEAK IN MEAT OR FISH					VEGETABLES <i>Fresh or Canned</i>
	Gm.	Protein. gm.	Fat. gm.	Calories	
MEATS:					Asparagus
Round steak, lean.....	10	2.8	0.8	19	Asparagus tips
Chicken.....	11	3.5	0.5	19	Brussels sprouts
Dried beef.....	9	3.5	0.5	19	Cabbage
Guinea Hen.....	12	2.8	0.8	19	Cauliflower
Kidney.....	17	2.8	0.8	19	Celery
Mutton chop, lean.....	14	3.2	0.6	19	Cucumbers
Mutton, boiled, lean.....	11	3.4	0.5	19	Egg plant
Roast beef, very lean.....	17	4.0	0.3	19	Endive
Steak, round, lean.....	10	2.8	0.8	19	Greens from beets
Sweet breads.....	11	4.4	0.1	19	Kohlrabi
Veal, roast or chop, lean.....	14	4.0	0.2	18	Leeks
FISH:					Lettuce
Bass, black.....	19	3.9	0.3	19	Pickles, sour or dill
Bass, sea.....	23	4.6	0.1	20	Pumpkin
Bluefish.....	13	3.4	0.6	20	Radishes
Cod fish.....	19	4.1	0.1	18	Rhubarb
Flounder.....	30	4.3	0.2	20	Sauerkraut
Haddock.....	19	4.2	0.1	18	Sorrel
Halibut.....	15	3.1	0.6	18	Spinach
Perch.....	17	3.3	0.7	20	String beans
Pike.....	24	4.5	0.1	19	Swiss chard
Porgy.....	16	3.0	0.8	20	Tomatoes
Shad Roe.....	15	3.1	0.6	18	Water cress
Smelts.....	22	3.5	0.4	18	Wax beans
Trout.....	17	3.6	0.4	18	
Weakfish.....	20	3.6	0.5	19	
Whitefish.....	12	2.7	0.8	19	
FISH, PRESERVED:					
Cod, salt.....	17	4.6	0.1	20	

LOW FAT, STARCH-FREE DIET—WEIGHED DIET

This series of diets is intended for routine use in those cases in which:

1. Restriction of protein is necessary to control the glycosuria.
2. There is no indication to curtail fats to the utmost because of a severe acidosis, or threatening coma.
3. The means of weighing the diet are at hand; if this is not the case the low fat, starch-free diet, measured diet, must be resorted to.

As previously stated, it requires 1500 calories of this diet series to prevent loss of protein from the body in small persons, whereas larger individuals require approximately 1750 calories to accomplish this. Foods rich in carbohydrate, according to the accessory diet list, may be added when a tolerance for the diets that prevent the loss of protein, is acquired.

A summary of the values for protein, fat, carbohydrate and calories for these diets is as follows:

Calories	500	750	1000	1250	1500	1750	2000
Protein, gm.....	40.4	59.2	71.2	89.5	99.9	124.4	135.7
Fat, gm.....	31.0	49.2	71.6	89.6	110.7	128.1	144.4
Carbohydrate, gm.....	12.0	12.0	12.0	12.5	12.5	12.5	21.7
Calories, actual.....	503	750	1006	1252	1489	1753	1986

The individual food values for some of these diets are given. A reference to these figures will enable the physician or dietitian to make finer graduations or other modifications in these diets without recourse to more elaborate tables for food values.

500 CALORIES

Food	Gm. or c.c.	Protein, gm.	Fat, gm.	C-H, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
One egg	50	6.6	6.0	0	83	171
Bacon ¹	40	4.2	7.6	0	88	
Black coffee .....	...	...	...	...	...
<i>Dinner:</i>						
Broth	150	3.3	0.3	0	16	166
Steak ²	40	9.4	4.1	0	77	
Vegetables ³	200	2.0	0	6.0	33	
Butter	5	0.1	4.3	0	40	
Black coffee .....	...	...	...	...	...
<i>Supper:</i>						
Broth	150	3.3	0.3	0	16	166
Steak ²	40	9.4	4.1	0	77	
Vegetables ³	200	2.0	0	6.0	33	
Butter	5	0.1	4.3	0	40	
Plain tea .....	...	...	...	...	...
		40.4	31.0	12.0	..	503

¹ The bacon is weighed uncooked. The fat and protein is calculated for the cooked product.

² The caloric equivalent of other meat or fish should be frequently substituted from the list on page 27 to furnish variety in the diet.

³ Two or three different vegetables should be chosen from the list on page 27 which tabulates the vegetables containing 5 per cent. or less of carbohydrates.

1000 CALORIES

Food	Gm. or c.c.	Protein, gm.	Fat, gm.	C-H, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
Eggs (2).....	100	13.2	12.0	0	166	
Bacon (see foot note 1, page 24).....	50	5.3	9.6	0	111	
Butter.....	5	0.1	4.3	0	40	
Black coffee.....	.....	.....	.....	.....	.....	317
<i>Dinner:</i>						
Broth.....	150	3.3	0.3	0	16	
Steak (see foot note 2, page 24).....	100	23.9	10.2	0	193	
Vegetables (see foot note 3, page 24).....	200	2.0	0	6.0	33	
Olive oil.....	10	0	10.0	0	93	
Butter.....	10	0.1	8.6	0	80	
Black coffee.....	.....	.....	.....	.....	.....	415
<i>Supper:</i>						
Broth.....	150	3.3	0.3	0	16	
Steak (see foot note 2, page 24).....	75	17.9	7.7	0	145	
Vegetables (see foot note 3, page 24).....	200	2.0	0	6.0	33	
Butter.....	10	0.1	8.6	0	80	
Tea (plain).....	.....	.....	.....	.....	.....	274
		71.2	71.6	12.0	...	1006

1500 CALORIES

Food	Gm. or c.c.	Protein, gm.	Fat, gm.	C-H, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
Eggs (2).....	100	13.2	12.0	0	166	
Bacon (see foot note 1, page 24).....	60	6.4	11.5	0	133	
Butter.....	10	0.1	8.6	0	80	
Black coffee.....	.....	.....	.....	.....	.....	379
<i>Dinner:</i>						
Broth.....	150	3.3	0.3	0	16	
Steak (see foot note 2, page 24).....	140	33.5	14.3	0	270	
Vegetables (see foot note 3, page 24).....	200	2.0	0	6.0	33	
Cream cheese.....	20	5.2	6.7	0.5	86	
Olive oil.....	15	0	15.0	0	140	
Butter.....	15	0.2	12.9	0	120	
Black coffee.....	.....	.....	.....	.....	.....	665
<i>Supper:</i>						
Broth.....	150	3.3	0.3	0	16	
One egg.....	50	6.6	6.0	0	83	
Steak (see foot note 2, page 24).....	100	23.9	10.2	0	193	
Vegetables (see foot note 3, page 24).....	200	2.0	0	6.0	33	
Butter.....	15	0.2	12.9	0	120	
Tea (plain).....	.....	.....	.....	.....	.....	445
		99.9	110.7	12.5	...	1489

2000 CALORIES

Food	Gm. or c.c.	Protein, gm.	Fat, gm.	C-H, gm.	Calories	Calories per meal
<i>Breakfast:</i>						
Eggs (2).....	100	13.2	12.0	0	166	
Ham.....	75	15.2	16.8	0	219	
Butter.....	15	0.2	12.9	0	120	
Vegetables (see foot note 3, page 24).....	100	1.0	0	3.0	16	
Black coffee.....	.....	.....	.....	.....	.....	521
<i>Dinner:</i>						
Broth.....	160	3.5	0.3	0	17	
Steak (see foot note 2, page 24).....	160	38.2	16.3	0	308	
Vegetables (see foot note 3, page 24).....	300	3.0	0	9.0	49	
Cream cheese.....	30	7.8	10.1	0.7	129	
Butter.....	20	0.2	17.2	0	160	
Olive oil.....	15	0	15.0	0	140	
Black coffee.....	.....	.....	.....	.....	.....	803
<i>Supper:</i>						
Broth.....	160	3.5	0.3	0	17	
Eggs (2).....	100	13.2	12.0	0	166	
Steaks (see foot note 2, page 24).....	140	33.5	14.3	0	270	
Vegetables (see foot note 3, page 24).....	300	3.0	0	9.0	49	
Butter.....	20	0.2	17.2	0	160	
Tea (plain).....	.....	.....	.....	.....	.....	662
		135.7	144.4	21.7	...	1986

On the next two pages the figures for the low fat, starch-free, weighed diets as they are to be used are given. In pad form, the two pages which face each other, are printed back to back, so that one sheet furnishes a complete dietary scheme.

LOW FAT, STARCH-FREE DIET, WEIGHED DIET

Calories	500	750	1000	1250	1500	1750	2000
BREAKFAST —Eggs, gm.....	(1)50	(1)50	(2)100	(2)100	(2)100	(2)100	(2)100
Bacon,* gm.....	40	40	50	60	60	..	..
Ham, gm.....	...	...	...	...	...	75	75
Butter, gm.....	...	...	5	5	10	10	15
Vegetables,** gm.....	...	...	...	...	...	...	100
Black coffee.....	...	...	...	...	...	...	...
DINNER —Broth, cc.....	150	150	150	150	150	150	160
Steak (Sirloin),*** gm.....	40	90	100	125	140	160	160
Vegetables,** gm.....	200	200	200	200	200	200	300
Cream cheese, gm.....	...	...	...	20	20	25	30
Butter, gm.....	5	5	10	15	15	15	20
Olive oil, cc.....	...	10	10	10	15	15	15
Black coffee.....	...	...	...	...	...	...	...
SUPPER —Broth, cc.....	150	150	150	150	150	150	160
Eggs, gm.....	...	...	...	...	(1)50	(1)50	(2)100
Steak (Sirloin),*** gm.....	40	70	75	100	100	140	140
Vegetables,** gm.....	200	200	200	200	200	200	300
Butter, gm.....	5	5	10	10	15	20	20
Tea (plain).....	...	...	...	...	...	...	...
SPECIAL ORDERS — Saccharine as desired.	...	...	...	...	...	...	...

* The bacon is weighed uncooked. The fat and protein content is calculated for the cooked product.

** Two or three different vegetables should be chosen from the accompanying list which tabulates the vegetables containing 5 per cent. or less of carbohydrates.

*** The calorie equivalent of other carbohydrate-free meat or fish should be frequently substituted from the accompanying list to furnish variety in the diet.

LOW-FAT, STARCH-FREE DIET—WEIGHED DIET

CALORIC EQUIVALENT OF 10 GM. OF SIRLOIN STEAK IN MEAT OR FISH

Food	Gm.	Protein, gm.	Fat, gm.	Calories
<i>Meats:</i>				
Sirloin steak.....	10	2.4	1.0	19
Bacon, fried, fat discarded.....	7	0.9	1.6	19
Brains, beef.....	16	1.4	1.5	19
Capon.....	9	2.4	1.0	19
Chicken.....	11	3.5	0.5	19
Corned beef.....	6	0.9	1.6	19
Dried beef.....	9	3.5	0.5	19
Duck.....	6	1.0	1.6	19
Ham, fresh.....	5	0.8	1.7	19
Ham, smoked.....	4	0.7	1.6	18
Ham, smoked, boiled.....	7	1.4	1.6	20
Ham, smoked, fried.....	5	1.1	1.7	20
Guinea hen.....	12	2.8	0.8	19
Kidney.....	17	2.8	0.8	19
Lamb chop.....	5	1.1	1.5	19
Lamb, roast.....	10	2.0	1.3	20
Mutton chop, lean.....	14	3.2	0.6	19
Mutton, boiled, lean.....	11	3.4	0.5	19
Mutton, roast.....	6	1.5	1.4	19
Pork chop, lean.....	12	3.1	0.7	19
Pork, roast.....	9	2.6	0.9	19
Roast beef.....	5	1.1	1.4	18
Roast beef, very lean.....	17	4.0	0.3	19
Squab.....	7	1.3	1.6	20
Steak round, lean.....	10	2.8	0.8	19
Steak sirloin, lean.....	10	2.4	1.0	19
Steak, tenderloin.....	7	1.7	1.4	20
Sweet breads.....	11	4.4	0.1	19
Tongue beef.....	12	2.3	1.1	20
Turkey, roast.....	7	2.0	1.3	20
Veal, roast or chop, lean.....	14	4.0	0.2	18
<i>Fish, fresh:</i>				
Bass, black.....	19	3.9	0.3	19
Bass, sea.....	23	4.6	0.1	20
Bluefish.....	13	3.4	0.6	20
Butterfish.....	11	2.0	1.2	19
Codfish.....	19	4.1	0.1	18
Flounder.....	30	4.3	0.2	20
Haddock.....	19	4.2	0.1	18
Halibut.....	15	3.1	0.6	18
Mackerel.....	14	2.4	1.0	19
Perch.....	17	3.3	0.7	20
Pike.....	24	4.5	0.1	19
Porgy.....	16	3.0	0.8	20
Salmon.....	11	2.2	1.1	19
Shad.....	12	2.3	1.1	20
Shad roe.....	15	3.1	0.6	18
Smelts.....	22	3.5	0.4	18
Trout.....	17	3.6	0.4	18
Weakfish.....	20	3.6	0.5	19
White fish.....	12	2.7	0.8	19
<i>Fish, preserved:</i>				
Cod, salt.....	17	4.6	0.1	20
Herring, smoked.....	6	2.2	1.0	18
Mackerel, salt.....	6	1.0	1.6	19
Salmon, canned.....	10	2.2	1.2	20
Sardines, canned.....	7	1.6	1.4	20

VEGETABLES
(Fresh or Canned)

Asparagus
Asparagus tips
Brussels sprouts
Cabbage
Cauliflower
Celery
Cucumbers
Egg plant
Endive
Greens from beets
Kohlrabi
Leeks
Lettuce
Pickles, sour or dill
Pumpkin
Radishes
Rhubarb
Sauerkraut
Sorrel
Spinach
String beans
Swiss chard
Tomatoes
Water cress
Wax beans

THE ACCESSORY DIET OF FOODS RICH IN CARBOHYDRATES

If the patient's urine continues to be sugar free on a "carbohydrate-free" diet of sufficient caloric value (1500 to 1750 calories), carbohydrate-containing foods may be added and the carbohydrate tolerance of the patient be determined. In those cases able to utilize a considerable amount of starch, the accessory diet may be varied from day to day, and use may be made of the following table, which gives the carbohydrate equivalent of one slice (1 ounce or 30 grams) of white bread, containing approximately 15 grams of starch.

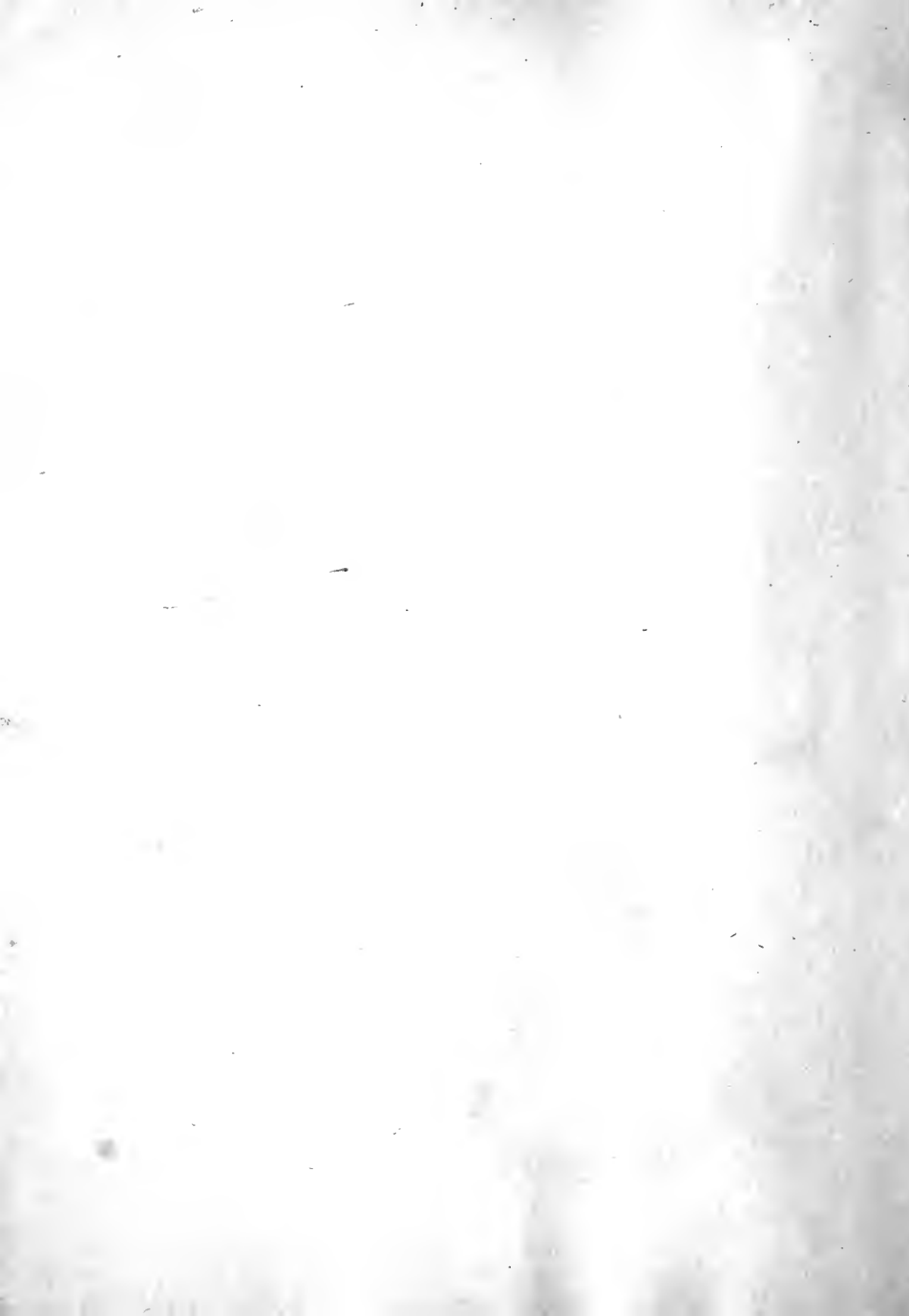
THE ACCESSORY DIET OF FOODS RICH IN CARBOHYDRATES

EACH PORTION CONTAINS APPROXIMATELY 15 GRAMS OF CARBOHYDRATES

Foods	Household Measure	Gm.	Foods	Household Measure	Gm.
<i>Uncooked Flours, etc.:</i>			<i>Fruits:</i>		
Barley.....	1 h. tbsp.	21	Apple.....	1 medium.	120
Buckwheat.....	1 h. tbsp.	19	Apricots.....	2 large.	120
Cornmeal.....	1 h. tbsp.	20	Banana (without skin).....	$\frac{1}{2}$ medium.	75
Farina.....	1 h. tbsp.	20	Cherries.....		90
Hominy.....	1 h. tbsp.	18	Currants.....	5 h. tbsp.	120
Macaroni.....	1 h. tbsp.	20	Grapefruit.....	$\frac{1}{2}$ small	150
Noodles.....	$1\frac{1}{2}$ h. tbsp.	20	Huckleberries.....	$3\frac{1}{2}$ h. tbsp.	90
Oatmeal.....	1 h. tbsp.	22	Lemons.....	2 medium.	210
Rice.....	1 h. tbsp.	18	Muskmelon.....	$\frac{1}{3}$	300
Rye flour.....	1 h. tbsp.	18	Nectarine.....	1	100
Spaghetti.....	$1\frac{1}{2}$ h. tbsp.	20	Olives, green.....	20	180
Vermicelli.....	$1\frac{1}{2}$ h. tbsp.	21	Orange.....	$\frac{1}{2}$ large.	150
Wheat flour.....	1 h. tbsp.	20	Peaches.....	$1\frac{1}{2}$ medium.	150
<i>Bread and Crackers:</i>			Pear.....	1 small.	100
Bread.....	1 slice.	30	Pineapple.....	3 slices.	150
Breakfast biscuit (Huntley & Palmer).....	3	18	Plums.....	2 medium.	75
Cornbread.....	1 slice.	32	Raspberries.....	$4\frac{1}{2}$ h. tbsp.	120
Roll (Vienna).....	$\frac{1}{2}$	25	Strawberries.....	8 h. tbsp.	200
Uneda Biscuit.....	3	18	Watermelon.....	Large slice.	300
Zwieback.....	$1\frac{1}{2}$	20	<i>Dried Fruits:</i>		
<i>Cooked Cereals:</i>			Apples.....	3 small.	22
"Force".....	5 h. tbsp.	18	Apricots.....	3 large.	24
Farina.....	$2\frac{1}{2}$ h. tbsp.	125	Currants.....	$1\frac{1}{2}$ tbsp.	20
Grapenuts.....	$1\frac{1}{2}$ h. tbsp.	20	Dates.....	3	19
Hominy.....	$1\frac{1}{2}$ h. tbsp.	90	Figs.....	1 large.	12
Macaroni.....	2 h. tbsp.	100	Prunes.....	2 large.	24
Oatmeal.....	$2\frac{1}{2}$ h. tbsp.	130	Raisins.....	10 large.	23
Rice.....	$1\frac{1}{2}$ h. tbsp.	60	<i>Milk and Cream:</i>		
Shredded wheat biscuit.....	$\frac{3}{4}$	22	Buttermilk.....	$1\frac{1}{2}$ tumbler.	300
<i>Cooked Vegetables:</i>			Cream, 16 per cent.....	$1\frac{1}{2}$ tumbler.	300
Artichokes.....	1 medium.	320	Cream, 40 per cent.....	$1\frac{1}{2}$ tumbler.	300
Beans (baked—canned).....	2 h. tbsp.	75	Koumiss.....	$1\frac{1}{2}$ tumbler.	300
Beans, lima.....	$1\frac{1}{4}$ h. tbsp.	50	Whole milk.....	$1\frac{1}{2}$ tumbler.	300
Beets.....	6 h. tbsp.	200	<i>Nuts:</i>		
Carrots.....	13 h. tbsp.	440	Almonds.....	60	90
Okra.....	4 h. tbsp.	200	Brazil.....	30	180
Onions.....	3	300	Chestnuts (roasted).....	15	40
Parsnips.....	4 slices.	120	Cocoa nut.....	1 slice (3 × 2 in.)	50
Peas, green.....	3 h. tbsp.	100	Filberts.....	100	100
Potato (baked).....	$\frac{1}{2}$ medium.	60	Peanuts.....	40	80
Potato (boiled).....	$\frac{1}{2}$ medium.	70	Pecans.....	35	110
Potato (mashed).....	$1\frac{1}{2}$ h. tbsp.	80	Pistachio.....	190	95
Potato, sweet (boiled).....	$\frac{1}{2}$ medium.	35	Walnuts.....	30	125
Squash.....	2 h. tbsp.	100			
Turnips.....	3 h. tbsp.	210			







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